



#2

ENTERED

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RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/090,035

DATE: 03/20/2002 P.5
TIME: 11:38:01

Input Set : A:\5718-198.txt

Output Set: N:\CRF3\03202002\J090035.raw

4 <110> APPLICANT: Simmons, Carl R.
 8 <120> TITLE OF INVENTION: Nucleic Acids Encoding Defense Inducible
 9 Proteins and Uses Thereof
 12 <130> FILE REFERENCE: 35718/242990
 W--> 14 <140> CURRENT APPLICATION NUMBER: US/10/090,035
 C--> 14 <141> CURRENT FILING DATE: 2002-02-28
 16 <150> PRIOR APPLICATION NUMBER: 60/272,227
 W--> 18 <151> PRIOR FILING DATE: 02/28/2001
 20 <160> NUMBER OF SEQ ID NOS: 25
 22 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 24 <210> SEQ ID NO: 1
 25 <211> LENGTH: 676
 26 <212> TYPE: DNA
 27 <213> ORGANISM: Zea mays
 29 <220> FEATURE:
 30 <221> NAME/KEY: CDS
 31 <222> LOCATION: (89)...(367)
 33 <400> SEQUENCE: 1
 34 acccacgcgt cgcgccacgc gtcgcagca atccacacaa gcacttcgaa ggaccactgc 60
 35 tcggaggaca caccaagcgt ctgcacca atg gct tac tac cag gag gtg gac 112
 36 Met Ala Tyr Tyr Gln Glu Val Asp
 37 1 5
 39 tac tgc tcg gag gag gtg agg tcg gtg gcc ccg gcc ggc ttc ggc cgc 160
 40 Tyr Cys Ser Glu Glu Val Arg Ser Val Ala Pro Ala Gly Phe Gly Arg
 41 10 15 20
 43 cac ggc ggc ggc gtc cag cag cac gtc gtc aag gag aag ttc gag gag 208
 44 His Gly Gly Gly Val Gln Gln His Val Val Lys Glu Lys Phe Glu Glu
 45 25 30 35 40
 47 gtc gac acg gta tca cgc gcc ggc gcc aac cac cac cac cat ggt 256
 48 Val Asp Thr Val Ser Arg Ala Gly Ala Asn His His His His His Gly
 49 45 50 55
 51 cac cac ggc ggc cac ggc ttc gtg gtg cgc gag acc agg gtc gag gag 304
 52 His His Gly Gly His Gly Phe Val Val Arg Glu Thr Arg Val Glu Glu
 53 60 65 70
 55 gac atc aac acc tgc acc ggc gag gtc cac gag cgc agg gag agc ttc 352
 56 Asp Ile Asn Thr Cys Thr Gly Glu Val His Glu Arg Arg Glu Ser Phe
 57 75 80 85
 59 ctc gcc agg gct aac tgagccgccc ggcggccggc atccacgccc gttcgtgctt 407
 60 Leu Ala Arg Ala Asn
 61 90
 63 gcctgcgtgc cttatgtatg tctgtgtgtg actggttgtg cagggtcatc gtacttggt 467
 64 atcgtacgtg cagcactca gtcctgttac gaattacgac aataagctcg tgacctgaat 527
 65 aaaacttctt cgtaatacta atacctacat caaaaaaaaa aaaaaaaaaa aaaaaaaaaa 587

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Output Set: N:\CRF3\03202002\J090035.raw

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66 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 647
67 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 676
69 <210> SEQ ID NO: 2
70 <211> LENGTH: 93
71 <212> TYPE: PRT
72 <213> ORGANISM: Zea mays
74 <400> SEQUENCE: 2
75 Met Ala Tyr Tyr Gln Glu Val Asp Tyr Cys Ser Glu Glu Val Arg Ser
76 1 5 10 15
77 Val Ala Pro Ala Gly Phe Gly Arg His Gly Gly Gly Val Gln Gln His
78 20 25 30
79 Val Val Lys Glu Lys Phe Glu Glu Val Asp Thr Val Ser Arg Ala Gly
80 35 40 45
81 Ala Asn His His His His His Gly His His Gly Gly His Gly Phe Val
82 50 55 60
83 Val Arg Glu Thr Arg Val Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu
84 65 70 75 80
85 Val His Glu Arg Arg Glu Ser Phe Leu Ala Arg Ala Asn
86 85 90
88 <210> SEQ ID NO: 3
89 <211> LENGTH: 574
90 <212> TYPE: DNA
91 <213> ORGANISM: Zea mays
93 <220> FEATURE:
94 <221> NAME/KEY: CDS
95 <222> LOCATION: (96)...(374)
97 <400> SEQUENCE: 3
98 acccaacgcgt ccgccacgc gtccgcacag caatccacac aagcacttcg acgtcacacg 60
99 ggcgctgcgc acagacacac caagcgctcgg cacca atg gct tac tac cag gag 113
100 Met Ala Tyr Tyr Gln Glu
101 1 5
103 gtg gac tac tgc tcg gag gag gtg agg tcg gtg gcc ccg gcc ggc ttc 161
104 Val Asp Tyr Cys Ser Glu Glu Val Arg Ser Val Ala Pro Ala Gly Phe
105 10 15 20
107 ggc cgc cac ggc ggc ggc gtc cag cag cac gtc gtc aag gag aag ttc 209
108 Gly Arg His Gly Gly Gly Val Gln Gln His Val Val Lys Glu Lys Phe
109 25 30 35
111 gag gag gtc gac acg gtc tca cgc gcc ggc gcc aac cac cac cac cac 257
112 Glu Glu Val Asp Thr Val Ser Arg Ala Gly Ala Asn His His His His
113 40 45 50
115 cat ggt cac cac ggc ggc cac ggc ttc gtg gtg cgc gag acc agg gtc 305
116 His Gly His His Gly Gly His Gly Phe Val Val Arg Glu Thr Arg Val
117 55 60 65 70
119 gaa gag gac atc aac acc tgc acc ggc gag gtc cac gag cgc agg gag 353
120 Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu Val His Glu Arg Arg Glu
121 75 80 85
123 agc ttc ctc gcc agg gct aac tgagccgcc ggcggccggc atccacgcc 404
124 Ser Phe Leu Ala Arg Ala Asn
125 90

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127 gttcgtgctt gcctgcgtgc cttatgtatg tctgtggttg actggttggt cagggtcatc 464
128 gtacttggct atcgtagctg cacgcactca gtcctgtac gaattacgac aataagctcg 524
129 tgacctgaat aaaacttctt cgtaatacta aaaaaaaaaa aaaaaaaaaa 574
131 <210> SEQ ID NO: 4
132 <211> LENGTH: 93
133 <212> TYPE: PRT
134 <213> ORGANISM: Zea mays
136 <400> SEQUENCE: 4
137 Met Ala Tyr Tyr Gln Glu Val Asp Tyr Cys Ser Glu Glu Val Arg Ser
138 1 5 10 15
139 Val Ala Pro Ala Gly Phe Gly Arg His Gly Gly Gly Val Gln Gln His
140 20 25 30
141 Val Val Lys Glu Lys Phe Glu Glu Val Asp Thr Val Ser Arg Ala Gly
142 35 40 45
143 Ala Asn His His His His His Gly His His Gly Gly His Gly Phe Val
144 50 55 60
145 Val Arg Glu Thr Arg Val Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu
146 65 70 75 80
147 Val His Glu Arg Arg Glu Ser Phe Leu Ala Arg Ala Asn
148 85 90
150 <210> SEQ ID NO: 5
151 <211> LENGTH: 577
152 <212> TYPE: DNA
153 <213> ORGANISM: Zea mays
155 <220> FEATURE:
156 <221> NAME/KEY: CDS
157 <222> LOCATION: (99)...(377)
159 <400> SEQUENCE: 5
160 tcgaccacg cgtccgcccc cgcgtccgca cagcaatcca cacaagcact tcgacgtcac 60
161 acgggcgctg cgcacagaca caccaagcgt cggcacca atg gct tac tac cag gag 116
162 Met Ala Tyr Tyr Gln Glu
163 1 5
165 gtg gac tac tgc tcg gag gag gtg agg tcg gtg gcc ccg gcc ggc ttc 164
166 Val Asp Tyr Cys Ser Glu Glu Val Arg Ser Val Ala Pro Ala Gly Phe
167 10 15 20
169 ggc cgc cac ggc ggc ggc gtc cag cag cac gtc gtc aag gag aag ttc 212
170 Gly Arg His Gly Gly Gly Val Gln Gln His Val Val Lys Glu Lys Phe
171 25 30 35
173 gag gag gtc gac acg gtc tca cgc gcc ggc gcc aac cac cac cac cac 260
174 Glu Glu Val Asp Thr Val Ser Arg Ala Gly Ala Asn His His His His
175 40 45 50
177 cat ggt cac cac ggc ggc cac ggc ttc gtg gtg cgc gag acc agg gtc 308
178 His Gly His His Gly Gly His Gly Phe Val Val Arg Glu Thr Arg Val
179 55 60 65 70
181 gaa gag gac atc aac acc tgc acc ggc gag gtc cac gag cgc agg gag 356
182 Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu Val His Glu Arg Arg Glu
183 75 80 85
185 agc ttc ctc gcc agg gct aac tgagccgccc ggcggccggc atccacgcc 407
186 Ser Phe Leu Ala Arg Ala Asn

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DATE: 03/20/2002

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Input Set : A:\5718-198.txt

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```

187          90
189 gttcgtgctt gcctgcgtgc cttatgtatg tctgtggttg actggttggt cagggtcatc 467
190 gtacttggct atcgtaactg cagcactca gtcctgtac gaattacgac aataagctcg 527
191 tgacctgaat aaaacttctt cgtaactacta aaaaaaaaaa aaaaaaaaaa 577
193 <210> SEQ ID NO: 6
194 <211> LENGTH: 93
195 <212> TYPE: PRT
196 <213> ORGANISM: Zea mays
198 <400> SEQUENCE: 6
199 Met Ala Tyr Tyr Gln Glu Val Asp Tyr Cys Ser Glu Glu Val Arg Ser
200 1 5 10 15
201 Val Ala Pro Ala Gly Phe Gly Arg His Gly Gly Gly Val Gln Gln His
202 20 25 30
203 Val Val Lys Glu Lys Phe Glu Glu Val Asp Thr Val Ser Arg Ala Gly
204 35 40 45
205 Ala Asn His His His His His Gly His His Gly Gly His Gly Phe Val
206 50 55 60
207 Val Arg Glu Thr Arg Val Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu
208 65 70 75 80
209 Val His Glu Arg Arg Glu Ser Phe Leu Ala Arg Ala Asn
210 85 90
212 <210> SEQ ID NO: 7
213 <211> LENGTH: 580
214 <212> TYPE: DNA
215 <213> ORGANISM: Zea mays
217 <220> FEATURE:
218 <221> NAME/KEY: CDS
219 <222> LOCATION: (99)...(380)
221 <400> SEQUENCE: 7
222 tcgaccacag cgtccgcccc cgcgtccgca cagcaatcca cacaagcact tcgacgtcgc 60
223 acgggcgctg cacacagaca caccaagcgt cggcacca atg gct tac tac cag gag 116
224 Met Ala Tyr Tyr Gln Glu
225 1 5
227 gtg gac tac tgc tcg gag gag gtg agg tcg gtg gcc ccg gcc ggc ttc 164
228 Val Asp Tyr Cys Ser Glu Glu Val Arg Ser Val Ala Pro Ala Gly Phe
229 10 15 20
231 ggc cgc cac gga ggc ggc gtc cag cag cac gtc gtc aag gag aag ttc 212
232 Gly Arg His Gly Gly Gly Val Gln Gln His Val Val Lys Glu Lys Phe
233 25 30 35
235 gag gag gtc gac acg gtc tca cgc gcc ggc gcc aac cac cac cac cac 260
236 Glu Glu Val Asp Thr Val Ser Arg Ala Gly Ala Asn His His His His
237 40 45 50
239 cac cat ggt cac cac ggc ggc cac ggc ttc gtg gtg cgc gag acc agg 308
240 His His Gly His His Gly Gly His Gly Phe Val Val Arg Glu Thr Arg
241 55 60 65 70
243 gtc gag gag gac atc aac acc tgc acc ggc gag gtc cac gag cgc agg 356
244 Val Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu Val His Glu Arg Arg
245 75 80 85
247 gag agc ttc ctc gcc agg gct aac tgagccgccc ggcggccggc atccacgccc 410

```

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DATE: 03/20/2002

PATENT APPLICATION: US/10/090,035

TIME: 11:38:01


Input Set : A:\5718-198.txt

Output Set: N:\CRF3\03202002\J090035.raw

```

248 Glu Ser Phe Leu Ala Arg Ala Asn
249          90
251 gttcgtgcct gcctgcgtgc cttatgtatg tctgtggttg actggttggtg caggggtcatc 470
252 gtacttggtc atcgtagctg cacgcactca gtcctgtac gaattacgac aataagctcg 530
253 tgacctgaat aaaacttctt cgtaatacta aaaaaaaaaa aaaaaaaaaa 580
255 <210> SEQ ID NO: 8
256 <211> LENGTH: 94
257 <212> TYPE: PRT
258 <213> ORGANISM: Zea mays
260 <400> SEQUENCE: 8
261 Met Ala Tyr Tyr Gln Glu Val Asp Tyr Cys Ser Glu Glu Val Arg Ser
262 1          5          10          15
263 Val Ala Pro Ala Gly Phe Gly Arg His Gly Gly Gly Val Gln Gln His
264          20          25          30
265 Val Val Lys Glu Lys Phe Glu Glu Val Asp Thr Val Ser Arg Ala Gly
266          35          40          45
267 Ala Asn His His His His His Gly His His Gly Gly His Gly Phe
268          50          55          60
269 Val Val Arg Glu Thr Arg Val Glu Glu Asp Ile Asn Thr Cys Thr Gly
270 65          70          75          80
271 Glu Val His Glu Arg Arg Glu Ser Phe Leu Ala Arg Ala Asn
272          85          90
274 <210> SEQ ID NO: 9
275 <211> LENGTH: 529
276 <212> TYPE: DNA
277 <213> ORGANISM: Zea mays
279 <220> FEATURE:
280 <221> NAME/KEY: CDS
281 <222> LOCATION: (53)...(331)
283 <400> SEQUENCE: 9
284 agcggcgggg aagaagggt acaagatgaa gacgcacaag gcgtcggcac ca atg gct 58
285                                     Met Ala
286                                     1
288 tac tac cag gag gtg gac tac tgc tcg gag gag gtg agg tcg gtg gcc 106
289 Tyr Tyr Gln Glu Val Asp Tyr Cys Ser Glu Glu Val Arg Ser Val Ala
290          5          10          15
292 ccg gcc ggc ttc ggc cgc cac ggc ggc ggc gtc cag cag cac gtc gtc 154
293 Pro Ala Gly Phe Gly Arg His Gly Gly Gly Val Gln Gln His Val Val
294          20          25          30
296 aag gag aag ttc gag gag gtc gac acg gtc gca cgc gcc gcc gcc aac 202
297 Lys Glu Lys Phe Glu Glu Val Asp Thr Val Ala Arg Ala Gly Ala Asn
298          35          40          45          50
300 cac cac cac cac cat ggt cac cac ggc ggc cac ggc ttc gtg gtg cgc 250
301 His His His His His Gly His His Gly Gly His Gly Phe Val Val Arg
302          55          60          65
304 gag acc agg gtc gag gag gac atc aac acc tgc acc ggc gag gtc cac 298
305 Glu Thr Arg Val Glu Glu Asp Ile Asn Thr Cys Thr Gly Glu Val His
306          70          75          80
308 gag cgc agg gag agc ttc ctc gcc agg gct aac tgagcagccc gggcggccgg 351

```


 Use of n and / or Xaa has been detected in the Sequence Listing. Review the Sequence Listing to ensure a corresponding explanation is present in the <220> to <223> fields of each sequence using n or Xaa.

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/090,035

DATE: 03/20/2002

TIME: 11:38:02

Input Set : A:\5718-198.txt

Output Set: N:\CRF3\03202002\J090035.raw

L:14 M:282 W: Numeric Field Identifier Missing, <140> CURRENT APPLICATION NUMBER: is Added.
L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:18 M:256 W: Invalid Numeric Header Field, Wrong Prior FILING DATE:YYYY-MM-DD
L:377 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:378 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:382 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:385 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:386 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:389 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:390 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:413 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:415 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:417 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:419 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:466 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:530 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17
L:579 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:583 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:587 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:591 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:595 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:596 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:597 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:705 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:709 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:713 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:717 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:721 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:722 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:723 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23